

Utility Patent Application

in

THE UNITED STATES PATENT AND TRADEMARK OFFICE

for:

**RETURN OF CONTENT AD SERVING RESOURCES**

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## BACKGROUND

### Field of the Invention:

[0001] The present invention relates to online (e.g., Internet) advertising, and more particularly, to a method and apparatus for an advertising system “returning” a content-served ad resource of a target document(s) when the advertising system determines that one or more ads should not be served using the resource.

### Background of the Invention:

[0002] Interactive media, such as the Internet, has the potential for effective targeting of advertisements (or “ads”) relative to traditional media, such as radio, television, print publications, etc. For example, some websites provide an information search functionality that is based on query keywords entered by the user seeking information. This user query can be used as an indicator of the type of information of interest to the user. By comparing the user query to a list of keywords specified by an advertiser, it is possible to provide some form of targeted advertisements to these search service users. For example, if a user enters the query term “sport utility vehicle,” the result page (which typically displays links to web documents determined to be relevant to the user’s query) may display a Ford, Chevrolet or other advertiser’s ad associated with this query term. An example of such a system is the Adwords system offered by Google, Inc.

[0003] While systems such as Adwords have provided advertisers the ability to better target ads to user interest, their effectiveness is limited to sites where a user enters a search query to indicate their topic of interest. However, the majority of web pages do not offer search functionality and for these pages it may be more difficult for advertisers

to target their ads. As a result, the (non-targeted) ads on non-search pages may be of little value to the viewer of the page and thus may be viewed more as an annoyance than a source of useful information. Not surprisingly, these ads typically provide the advertiser with a lower return on investment than search-based ads, which are more targeted.

**[0004]** Recently, ad systems have been developed which can provide targeted ads on web documents, irrespective of whether such documents provide search capability or the user enters a query to access the document. For example, such ad systems include “content ad” systems that may dynamically analyze the content of a target document (which does not necessarily include search functionality) to determine whether any ads provided by one or more advertisers to the ad system are relevant to the content of the target document. If so, such an ad system may provide one or more ads to be served via a resource (e.g., page/display space, audio resource, etc.) of the target document to an end user (also referred to as an “advertising target”). An example of a content ad system is described in U.S. Patent Application No. 10/375,900, entitled “Serving Advertisements Based on Content,” filed February 26, 2003 which is assigned to the assignee of the present application and is hereby incorporated by reference in its entirety herein.

**[0005]** Typically, online advertising systems collect payment from advertisers based on one or more factors, such as the amount an advertiser is willing to pay for a specific placement of its ad relative to other ads or content, the key words with which the advertiser wishes its ads to be associated, the amount or frequency with which its ads are output by the advertising system (sometimes referred to as the “impressions” of the ad), the number of times its ads are selected by advertising targets (i.e., the users to whom the

ads are displayed or otherwise output by the vis-à-vis the advertising system), or some factor(s) typically relating to the performance (e.g., impressions, clickthrough, etc.) of the ad.

**[0006]** In a content ad system, payment may, but does not necessarily, also flow from the content ad system to a publisher of the target document. A publisher, as used herein, is defined broadly to any entity (e.g., author/owner) or mechanism (e.g., a browser) that directly or indirectly can make a target document available (e.g., displayed or otherwise output via a browser) to a user. For example, the content ad system may share revenue with the publisher based on the performance of ads the content ad system provides via a resource of the target document. Alternatively or in addition, the content ad system may pay the publisher a flat fee for rendering one or more ads via the target web document. A commercially available example of a content ad system is the AdSense system and service offered by Google, Inc.

**[0007]** In some situations, it may be advantageous for a content ad system not to provide advertisers' ads in conjunction with a target web document. For example, the web document may be unavailable to the content ad system to enable it to match/target relevant ads to the content of the web document. On the other hand, providing an ad would be inappropriate if the target document contains content that is "sensitive" or "negative" (e.g., if the content relates to a tragic news story, pornography, alcohol or tobacco, gambling, guns, etc.).

**[0008]** In such situations, prior content ad systems typically may provide untargeted ads, inappropriate ads (e.g., a gun ad in conjunction with a tragic story about someone

being killed by a gun) or provide “charitable” or “house” ads to the publisher.

Unfortunately, these options may diminish ad performance (thereby decreasing net revenue or even creating net monetary loss for the content ad system and/or the publisher) or may lower user experience on the target web document (e.g., if irrelevant or inappropriate ads are provided) or both. In the latter instance, a user may become desensitized to, or even annoyed by, irrelevant or offensive ads.

**[0009]** Thus, what is desirable is a method and system for overcoming the above-described limitation(s) associated with prior ad systems.

### SUMMARY OF THE INVENTION

**[0010]** According to one aspect of the invention, one or more situations are identified by an ad system, in which situations a content ad system should not provide ads in association with a target document.

**[0011]** According to another aspect of the invention, in a situation in which a content ad system determines that it should not provide one or more ads in association with a target document, a resource for rendering such ads in conjunction with the target document may be “returned” to another entity, for example, for rendering of alternative ads or other content.

### BRIEF DESCRIPTION OF THE DRAWINGS

**[0012]** Fig. 1 is a diagram illustrating an environment within which an embodiment of the invention may be implemented;

[0013] Fig. 2 is a diagram functionally illustrating an exemplary advertising system, in accordance with one embodiment of the invention;

[0014] Fig. 3 is a diagram illustrating an architecture in which an embodiment of the present invention may be implemented; and

[0015] Fig. 4 is a flow diagram of allowing an advertising system to “return” a content ad resource of target document associated with an publisher, in accordance with one embodiment of the invention.

#### DETAILED DESCRIPTION

[0016] The present invention provides methods and systems for allowing an ad system to identify situations where it should not provide ads vis-à-vis a resource of a target web document, and in those situations, allow “return” (e.g., refusal, redirect, etc.) of the resource. For example, in one embodiment of the invention, if the content ad system determines it cannot or should not render one or more ads via the resource, the content ad system may redirect an ad request associated with the target document to an alternative entity which may provide ad or other content via the resource. The alternative entity may be predefined by another entity or mechanism, e.g., the publisher of the target document. With respect to providing ads in conjunction with a target document, a “resource” of the target document as used herein broadly refers to one or combination of channels associated with the target document in which advertising may be output to a user, including without limitation a display area of the target document (e.g., a frame or other displayed portion of a web document), an audio file which may be output along

with the target document, etc. Other aspects, features, and benefits of the invention will become apparent from the following description of exemplary embodiments thereof.

#### EXEMPLARY ARCHITECTURE

[0017] Fig. 1 is a diagram illustrating an environment within which an embodiment of the invention may be implemented. The environment includes an advertiser 110, an advertising system 120, a publisher 130, and an advertising target 140.

[0018] Advertiser 110 may be the party that directly sells the goods or services being advertised (e.g., Amazon.com) or an agent authorized to act on the advertiser's behalf. The advertisement (or "ad") desired by advertiser 110 may exist in a variety of forms ranging from standard print advertisements, online advertisements, audio advertisements, audio/visual advertisements, or any other type of sensory message desired.

[0019] Advertising system 120 interfaces with both the advertiser 110 and the publisher 130. It may perform a variety of functions, as explained in more detail below in reference to Fig. 2. One embodiment of the invention may be used with such an advertising system 120.

[0020] Publisher 130 is the entity (e.g., owner, author or other provider of a target document) or mechanism (e.g., browser or other mechanism) that may request and/or obtain advertisements ("ads") from advertising system 120 to be output in conjunction with a target document. The advertising system 120 may provide such ads periodically to the publisher 130, which may or may not issue requests for the same to the advertising system 120. In one embodiment, when a user/advertising target requests the target

document (e.g., using a browsing program), the publisher 130 may issues a request for an ad to the advertising system 120 for rendering of one or more ads vis-à-vis a resource of the target document.

**[0021]** The publisher 130 may obtain the requested advertisements from the advertising system 120 and present the advertisement to the advertising target 140 in conjunction with the target document. For example, one or more ads provided by the advertising system 120 may be displayed on a portion of the target document when the target document is generated for display to the advertising target. Typically, the publisher 130 is the entity that provides the content (e.g., the target document) with which the advertisement is to be associated. In one implementation, the publisher 130 is a web search engine, such as that employed by Google, Inc. at [www.google.com](http://www.google.com). In another implementation, the publisher 130 may or may not include search functionality.

**[0022]** In another embodiment, the publisher 130 refers to a mechanism that facilitates output of a target to the advertising target 140. For example, the publisher may include a browser, document cache/database or other mechanism that may not be directly associated with the target document.

**[0023]** Advertising target 140 is the user or set of users who ultimately may receive the advertisement. In the case of visual advertisements, for example, the advertisement target 140 is the person who views the advertisement as displayed on the target document provided by the publisher 130. In one embodiment, when the advertising target 140 navigates to the target document (e.g., by entering its URL into a browser used by the advertising target 140, linking to it from another document, etc.), the publisher 130 issues



a request to the advertising system 120 for rendering of one or more ads in conjunction with the target document for output to the advertising target 140. As described in further detail below with respect to one embodiment of the invention, the advertising system 120 may service (i.e., accept it and render one or more ads in conjunction with the target document) or redirect the request based on one or more criteria.

**[0024]** Fig. 2 is a diagram functionally illustrating an exemplary advertising system, in accordance with one embodiment of the invention. The system includes an ad campaign entry and management component 210, a tools component 220, a billing component 230, one or more databases 240, an publisher interface component 250, an ad selection component 260, an ad ordering component 270, an ad serving component 280, and a statistics engine component 290.

**[0025]** To aid in the understanding of this embodiment the invention, components of the advertising system 120 will be explained below. Although Fig. 2 shows a particular arrangement of components constituting advertisement system 120, those skilled in the art will recognize that not all components need be arranged as shown, not all components are required, and that other components may be added to, or replace, those shown.

**[0026]** Ad entry and management component 210 is the component by which the advertiser enters information required for an advertising campaign and manages the campaign. An ad campaign contains one or more advertisements that are related in some manner. For example, the Ford Motor Company may have an ad campaign for zero percent financing, which could contain a series of advertisements related to that topic. Among the other things that could be provided by an advertiser through ad entry and

management component 210 are the following: one or more advertising creatives (simply referred to as "ads" or "advertisements"), one or more set of keywords or topics associated with those creatives (which may be used as targeting information for the ads), geographic targeting information, a value indication for the advertisement, start date, end date, etc. The data required for, or obtained by, ad entry and management component 210 resides in one of the databases 240.

**[0027]** Tools component 220 contains a variety of tools designed to help the advertiser 110 create, monitor, and manage its campaigns. For example, tools component 220 may contain a tool for helping advertiser 110 estimate the number of impressions an ad will receive for a particular keyword or topic. Similarly, tools component 220 may be used to help advertiser 110 generate a list of keywords or topics for a given advertisement, or to generate additional keywords or topics based on representative ones supplied by advertiser 110. Other possible tools may be provided as well. Depending on the nature of the tool, one or more databases 240 may be used to gather or store information.

**[0028]** Billing component 230 helps perform billing-related functions. For example, billing component 230 generates invoices for a particular advertiser 110 or ad campaign. In addition, billing component 230 may be used by advertiser 110 to monitor the amount being expended for its various campaigns. The data required for, or obtained by, billing component 230 resides in a database 240.

**[0029]** Databases 240 contain a variety of data used by advertising system 120. In addition to the information mentioned above in reference to ad entry and management

system 210, databases 240 may contain statistical information about what ads have been shown, how often they have been shown, the number of times they have been selected, who has selected those ads, how often display of the ad has led to consummation of a transaction, etc. Although the databases 240 are shown in Fig. 2 as one unit, one of ordinary skill in the art will recognize that multiple databases may be employed for gathering and storing information used in advertising system 120.

**[0030]** Publisher interface 250 is a component that interfaces with publisher 130 to obtain or send information. For example, publisher 130 may send a request for one or more advertisements to publisher interface 250. The request may include information such as the domain or page (e.g., uniform resource locator or URL) requesting the advertisement, any information available to aid in selecting the advertisement, the number of ads requested, etc. In response, publisher interface 250 may provide one or more advertisements to publisher 130. In addition, publisher 130 may send information about the performance of the advertisement back to the ad system via the publisher interface 250. This may include, for example, the statistical information described above in reference to a database 240. The data required for, or obtained by, publisher interface component 250 resides in a database 240.

**[0031]** Ad selection component 260 receives a request for a specified number of advertisements, coupled with information to help select the appropriate advertisements. This information may include, for example, a search query specified by an end user. Alternatively, or in addition, as described in more detail below, this information may include data related to the content of a target document for which the advertisements are being requested. In one embodiment, ad selection component 260 may also include

hardware, software or a combination thereof for performing one or more of the methods of the invention, including determining whether to rendering one or more ads in conjunction with a target document based on one or more criteria, or to allow an alternative entity to render ads or other content.

**[0032]** Ad ordering component 270 receives a list of relevant ads from ad selection component 260 and determines a preference order in which they should be rendered to an end user. For example, relevant ads may be ordered based on the value indication associated with each ad. These ordered ads may be provided to an ad serving component 280.

**[0033]** Ad serving component 280 receives an ordered list of ads from ad ordering component 270, and formats that list into a manner suitable for presenting to publisher 130. This may involve, for example, rendering the ads into hypertext markup language (HTML), into a proprietary data format, etc.

**[0034]** Statistics engine 290 contains information pertaining to the selection and performance of advertisements. For example, statistics engine 290 may log the information provided by publisher 130 as part of an ad request, the ads selected for that request by ad selection component 260, the order selected by ad ordering component 270, and the presentation of the ads by ad serving component 280. In addition, statistics engine 290 may log information about what happens with the advertisement once it has been provided to publisher 130. This includes information such as on what location the ad was provided, what the response was to the advertisement, what the effect was of the advertisement, etc.

**[0035]** Fig. 3 is a diagram illustrating an architecture in which an embodiment of the present invention may be implemented. The architecture includes multiple client devices 302, a server device 310, and a network 301, which may be, for example, the Internet. Client devices 302 each include a computer-readable medium 309, such as random access memory, coupled to a processor 308. Processor 308 executes program instructions stored in memory 309. Client devices 302 may also include a number of additional external or internal devices, such as, without limitation, a mouse, a CD-ROM, a keyboard, and a display. Thus, as will be appreciated by those skilled in the art, the client devices may be personal computers, personal digital assistants, mobile phones, content players, etc.

**[0036]** Through client devices 302, requestors 305 can communicate over network 301 with each other and with other systems and devices coupled to network 301, such as server device 310. Requestors 305 may, for example, be advertisers 110, publisher 130, or advertising target 140.

**[0037]** Similar to client devices 302, server device 310 may include a processor 311 coupled to a computer readable memory 312. Server device 310 may additionally include a secondary storage element, such as a database 240.

**[0038]** Client processors 308 and server processor 311 can be any of a number of well known micro-processors, such as processors from Intel Corporation, of Santa Clara, California. In general, client device 302 may be any type of computing platform connected to a network and that interacts with application programs, such as a digital assistant or a “smart” cellular telephone or pager. Server 310, although depicted as a

single computer system, may be implemented as several computer systems. Furthermore, client devices 302 or server 310 may function both as clients and servers.

[0039] Memory 312 may contain a number of programs, such as the components described above in reference to Fig. 2.

#### OPERATION

[0040] Fig. 4 is a flow diagram of allowing an advertising system to “return” a content ad resource of target document associated with an publisher, in accordance with one embodiment of the invention. As used herein, the term “document” includes any type of paper or electronic document or file, including audio, video, image, text, etc. That is, as will be appreciated by one skilled in the art, a "document" as used in the specification is any machine-readable and machine-storable work product. A document may be a file, a combination of files, one or more files with embedded links to other files, etc., and may include a web page, a collection of web pages under one or more domains, etc. A document may be cast in HTML, XML, or one or a combination of these or other formats, and may include various interactive elements such as hyperlinks, fill-in forms, etc. For the sake of illustration, it may be understood that at least a portion of the process described herein takes place as part of the ad system 120, although those skilled in the art will recognize that it need not take place in that system alone. The exemplary method is not limited by the order shown in the flow diagram.

[0041] In one implementation of the method shown in Figure 4, the ad system 120 may provide an publisher, such as the publisher 130, with client-side Javascript

(referred to as “ad\_consumer\_creative”) to have hosted by its target document(s) for which ads may be requested by publisher 130. In turn, the ad system 120 may host server-side Javascript (“show\_ads.js”) to interface with the ad\_consumer\_creative via the publisher interface 250. In this exemplary implementation, for a given target document, the ad\_consumer\_creative may include a tag (referred to as “alternate\_ad\_url”) that is an identifier, in this example, a URL, of an alternative entity.

**[0042]** Thus, if the advertising system determines that it should not provide an ad in conjunction with, and vis-à-vis a resource of, a target document of the publisher, it may redirect an ad rendering request associated with the target document to the alternative entity for rendering of an ad or other content by the alternative entity. For purpose of illustration, the method depicted in the flow diagram of Figure 4 is described with reference to this exemplary, specific implementation. It will be appreciated, however, to those skilled in the art that the invention—including having an ad system determine whether or not to use or “return” an ad-serving resource of a target document—is not limited to this particular implementation.

**[0043]** At block 410, an ad rendering request is received by an advertising system from a publisher for rendering of one or more ads via a resource of a target document associated with, or provided by, the publisher. In one embodiment, the request for an ad, in one embodiment, is made in response to a user requesting downloading or viewing of the target document. In another embodiment, the request may be issued to the advertising system irrespective of whether a user requests the target document. In yet another embodiment, the advertising system may perform the following method autonomously—

i.e., without receiving or responding to a request for ad rendering by the publisher or other entity with which the target document is associated.

**[0044]** At block 420, the ad system determines, based on one or more criteria, whether to render one or more ads using a resource of the target document. The criteria could include whether a set of one or more conditions are met, in which case ad(s) may be rendered by the ad system in conjunction with, and using a resource of, a target document.

**[0045]** In one embodiment, the set of conditions may include one or a combination of the following: (1) whether the target document or its content available to the ad system, for example, to analyze in order to determine relevance to one or more ads; (2) the target document is deemed not to contain negative content, which could include one or a combination of subject matter related to pornography, tragic news events including accidents, promotion of gambling, firearms, tobacco, or illegal or immoral activity, etc.; (3) the ad system possesses a threshold number of relevant ads for rendering in conjunction with the target document (such relevance could depend on the degree of correlation between key word, category, geographical or other targeting criteria of the ads with the textual content, meta tag or other subject indicia of the target document); (4) one or threshold number of ads with untapped budgets are available (e.g., an ad having an untapped budget may be one for which its advertiser may be willing to pay the ad system for impressions or clicks thereof).

**[0046]** In one embodiment, the one or more conditions could also include a determination, which can be based on an estimate or prediction, of ad performance (e.g.,



clickthrough rate) or whether providing one or more ads will result in net or a threshold monetary gain or loss for the ad system. For example, the determination may be based on historical or estimated ad performance; e.g., if rendering one or more ads is expected not to result in a threshold clickthrough, the ad system may not use the resource to render the one or more ads.

**[0047]** Similarly, the determination may be based on the ad system determining whether the (expected) revenue (including payment from one or more advertisers) if one or more ads are rendered by the ad system in conjunction with the target document exceeds the cost to the ad system if the one or more ads are rendered. Such cost typically might include a fixed or variable payment the ad system expects to pay the publisher with which the target document is associated if the ad is rendered or the resource of the target document is otherwise used by the ad system. For example, the condition may be determined based on (historical) performance data for the target document or other documents (e.g., those having one or more concepts similar to the target document) that may indicate a likelihood of relatively low traffic, ad clickthrough, or other poor performance for an ad output in conjunction with the target document, in which case the ad system may refrain from providing an ad.

**[0048]** More generally, such a condition may be based on the ad system determining whether an amount to be paid to the publisher or other entity for providing one or more ads (or more generally, for using the resource of the target document to render ads or other content) exceeds the (expected) return for the ad system if those ads are rendered in conjunction with the target document; in other words, will gross return/revenue exceed cost for the ad system if one or more ads are rendered. Such return

or cost may be a function of whether, how much, or how often ads are rendered in conjunction with the target document, the placement/prevalence of those ads, or the clicks those ads receive or are expected to receive from the advertising targets upon whom those ads are impressed. Thus if the ad system determines that rendering an ad using the resource of the target document will likely result in a net gain for the ad system, this condition may be deemed to have been met, which case the publisher may service the ad rendering request.

**[0049]** At block 430, depending on the determination at block 420 of whether one or more conditions are met or not, the ad system decides whether to render an ad using a resource of the target document. For example, if the ad system at block 420 determines that expected revenue will exceed cost for rendering an ad, then at block 430, the ad system may decide to render an ad. Conversely, if the ad system determines at block 420 that a threshold number of relevant, untapped-budget ads are not available for rendering, the target document contains “negative” or other inappropriate content, or some other condition(s) favorable for rendering an ad does not exist, then at block 420, the ad system may decide not to render an ad.

**[0050]** In the exemplary Javascript implementation described, upon receipt of an ad request associated with the target document, the show\_ads.js script of the ad system creates an iframe whose source is a request to an ad server of the ad system, and also includes the alternative\_ad-url parameter. In this implementation, if the ad system decides not to render an ad, its ad server may respond with a 302 HTTP status code (or some other “redirect” indication), setting the location field of an outgoing HTTP header to the url identified by the alternative\_ad\_url parameter—i.e., allowing an alternative

entity, as indicated by the `alternative_ad_url` parameter, to use the resource of the target document to render an ad or other content. The alternative entity may be designated by the entity issuing the ad request (e.g., the publisher with which the target document is associated), and it may be the publisher itself, another ad system, a content provider that does not necessarily provide ads, etc.

**[0051]** In one embodiment, the ad system may “tag” a request for an ad with an identifier, for example, to prevent infinite loops that might occur if a redirect is sent back to the publisher (or other entity) and that entity again makes a request to the ad system, which again decides to issue a redirect, and so on. In the exemplary Javascript implementation, the ad system may name (e.g., by assigning a unique number or other identifier to) an iframe it creates for a particular ad request, so that if the alternative entity redirects a redirected request back to the ad system, the ad system recognizes the name, logs a bad redirect message, and does not further redirect the request to the alternative entity.

**[0052]** If the ad system decides not to render an ad, then at block 450, this decision may be indicated (e.g., using a technique such as that described above with reference to an exemplary implementation of the invention using Javascript, iframes and use of an `alternative_ad_url`) such as to allow an alternative entity to use the resource to render an ad(s) or other content using the resource of the target document.

**[0053]** In one embodiment, if, based on one or more conditions existing or not existing, the advertising system decides not to render an ads, the advertising system may also provide an indication to the publisher and/or another (alternative) entity/mechanism

of what condition(s) existed or didn't exist that caused the decision not to render one or more ads. For example, as those skilled in the art will appreciate, a certain sequence of one or more bits may be mapped to a condition existing or not existing and provided by the ad system in response to an ad request.

**[0054]** The indication may enable the publisher and/or the alternative entity to render alternative content, which may or may not include ads, in conjunction with the target document, edit the target document or take some other action. For example, if the publisher decides not to render ads because the target document contains pornographic content, the indication may identify the existence of pornographic content as a basis for the decision not to render ads and the alternative entity may then provide ads or content relevant/targeted to pornographic content.

#### CONCLUSION

**[0055]** Thus, a method and system has been described in which a (content) ad system may determine, based on one or more criteria, not to render one or more ads in conjunction with a target document, and such determination may cause an alternative entity to render ads or other content using a resource of the target document originally allocated for ad rendering by the ad system.

#### GENERAL

**[0056]** It should be appreciated that reference throughout this specification to "one embodiment" or "an embodiment" or "an aspect" of the invention means that a particular

feature, structure or characteristic described in connection with the embodiment is included in at least one embodiment of the present invention. Therefore, it is emphasized and should be appreciated that two or more references to “an embodiment” or “one embodiment” or “an alternative embodiment” or “an aspect” in various portions of this specification are NOT necessarily all referring to the same embodiment. Furthermore, the particular features, structures or characteristics of one or more embodiments or aspects described may be combined or implemented independently of each other as suitable in one or more embodiments of the invention.

**[0057]** It will be apparent to one of ordinary skill in the art that aspects of the invention, as described above, may be implemented in many different forms of software, firmware, and hardware in the implementations illustrated in the figures. The actual software code or specialized control hardware used to implement aspects consistent with the present invention is not limiting of the present invention. Thus, the operation and behavior of the aspects were described without reference to the specific software code--it being understood that a person of ordinary skill in the art would be able to design software and control hardware to implement the aspects based on the description herein.

**[0058]** The foregoing description of preferred embodiments of the present invention provides illustration and description, but is not intended to be exhaustive or to limit the invention to the precise form disclosed. Modifications and variations are possible in light of the above teachings or may be acquired from practice of the invention.

**[0059]** No element, act, or instruction used in the description of the present application should be construed as critical or essential to the invention unless explicitly

described as such. Also, as used herein, the article “a” is intended to include one or more items. Where only one item is intended, the term “one” or similar language is used. The term “or” means “and/or”.

**[0060]** It should further be appreciated that, in the foregoing description of exemplary embodiments of the invention, various features of the invention are sometimes grouped together in a single embodiment, figure, or description thereof for the purpose of streamlining the disclosure and aiding in the understanding of one or more of the various inventive aspects. This method of disclosure, however, is not to be interpreted as reflecting an intention that the claimed invention requires more features than are expressly recited in each claim. Rather, as the following claims reflect, inventive aspects lie in less than all features of a single foregoing disclosed embodiment. Thus, the claims (also as such may be amended, reissued, etc., from time to time) are hereby expressly incorporated into this Detailed Description, with each claim standing on its own as a separate embodiment of this invention.